

Demos for IAB Meeting February 17, 1999

(1) **Optimized TCP/IP Gateways for Satellite Networks**

We demonstrate a solution that improves the performance of TCP/IP protocols over heterogeneous network environments, especially networks containing satellite links. In our architecture, the end-to-end connection is split into segments, and the protocol on the satellite segment is optimized for the characteristics of the satellite link.

(2) **Terrestrial-Wireless Extensions of DBS Networks**

We have implemented a method of extending DBS networks to the various hosts on a satellite network attached to the satellite down-link host. We use the concept of proxies to demonstrate how this can be used to redistribute data from a satellite down-link host to multiple hosts on a wireless local area network.

(3) **Multicast Services Over DBS**

We have developed an IGMP proxy solution for providing multicast data delivery over a Direct Broadcast System (DBS) like DirecPC. We demonstrate an application of this to provide video and audio services over a DBS.

(4) **Internet Simulation Test-bed**

We have developed a set of simulation modules in OPNET to serve as basic components that can be used to model various satellite-terrestrial hybrid networks. These include traffic models, standard TCP models and their enhancements, protocol boosters as well as channel models. We demonstrate a simulation study of providing Internet over satellite.

(5) **ISS Orbit Simulation**

We are carrying out coverage and performance analysis of the NASA ISS network. In this simulation we model a LEO satellite's communication with a MEO constellation. The simulation models both ground stations as well as the various satellite components of the ISS system in OPNET.